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FILING OR 371 ATTY.DOCKET NO TOT CLMS IND CLMS FIL FEE REC'D **DRAWINGS** APPL NO. ART UNIT (c) DATE 21021YP 10/500,972 07/02/2004 1626 100

CONFIRMATION NO. 1833

FILING RECEIPT

Date Mailed: 02/09/2005

000210 MERCK AND CO., INC P O BOX 2000 RAHWAY, NJ 07065-0907

Receipt is acknowledged of this regular Patent Application, it will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections, facsimile number 703-746-9195. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

Melissa Egbertson, Ambler, PA; Jeffrey Y. Melanmed, Warminster, PA; Steven D Young, Lansdale, PA,

H. Marie Langford, Lansdale, PA Steven D. Young, Lansdale, PA

Power of Attorney:

Kenneth Walton-32951

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/US03/00813 01/13/2003 which claims benefit of 60/349,775 01/17/2002

Foreign Applications

Projected Publication Date: To Be Determined - pending completion of Security Review

Non-Publication Request: No

Early Publication Request: No

PATENT DEPARTMENT

FEB 1 4 2005

Hydroxynaphthyridinone carboxamides useful as hiv integrase inhibitors

Preliminary Class

544

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60/349,775

Appr. # use through 07/31/2006. OMB 0651-0032 SUBSTITUTE for PTO/SB/01 (08-03), DECLARATION FOR U1/1LITY OR DESIGN PATENT APPLICATION

21021PV

THE STATE OF THE S										
DECLARAT		Atte	orney Docket Number	21021Y						
POWER OF A' FOR UTILITY (Firs	t Named Inventor	amed Inventor Melissa Egbertson, et al.						
PATENT APPI	LICATION		C	OMPLETE IF KNOWN						
(37 CFR 1	(.63)	App	lication Number							
Declaration Submitted	Declaration Submitted after Init		ng Date							
with Initial OR Filing	Filing (surcharge (37 CFR 1.16 (e)) required)	Gro	up Art Unit							
· .	, , , , , , , , , , , , , , , , , , ,	Exa	niner Name							
As a below named invento	or, I hereby declare t	hat:								
NG 3	a .:.: 1 *									
My residence, mailing addr	ress, and citizenship a	re as stat	ed below next to my name	€.						
I believe I am the original,	I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:									
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HYDROXYNAPHTHYRIDI	HYDROXYNAPHTHYRIDINONE CARBOXAMIDES USEFUL AS HIV INTEGRASE INHIBITORS									
the specification of which	the specification of which (Title of the Invention)									
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bears the Attorney Do	cket Number and Title	e or the r	nvention noted above	•						
OR is attached hereto			•		•					
OR										
was filed on (MM/DD	/YYYY)		as United States App	olication Number or PCT Internati	onal					
Application Number	and	i was am	ended on (MM/DD/YYY	Y) (if ar	oplicable).					
I hereby state that I have rev	riewed and understand	i the con	tents of the above identifi	ed specification, including the cla						
amended by any amendment	specifically referred	to above			•					
I acknowledge the duty to di	isclose to the Patent a	nd Trade	mark Office all information	on known to me to be material to						
I acknowledge the duty to disclose to the Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between										
the filing date of the prior ap	oplication and the nati	onal or F	CT international filing da	ate of the continuation-in-part app	lication.					
I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent or inventor's										
certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate(s),										
or of any PCT international a	ve also identified belo opplication having a fi	ow, by cn ling date	before that of the applica	gn application for patent or invent tion on which priority is claimed.	or's certificate(s),					
Prior Foreign Application	i i i i i i i i i i i i i i i i i i i			den en willen priority is claimed.	Princips Claimed?					
Number(s)	tion Foreign Filing Date Country (MM/DD/YYYY) Attorney Docket Number YES NO									
Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.										
I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.										
•			Filing Date							
Application Number(s)			(MM/DD/YYYY)	· Attorney Docket Number						

01/17/2002



Approv use through 07/31/2006. OMB 0651-0032 SUBSTITUTE for PTO/SB/01 (08-03), DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION

DECLARATION AND POWER OF ATTORNEY for Utility or Design Patent Application

DECLA	IRATION AND	TO TE	K O1.	AIIC	7101	151 101			16			
I hereby claim the benefit under 35 U.S.C 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information known to me to be material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.												
date of dis a		Parent Filing Date				Parent Patent Number (if applicable)						
Application Number (MM/DD/YYYY) (if applicable)										pacable		
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Addition	ial U.S. or PCT interna	tional applicat	ion numb	ers are lis	ted on	a suppleme	ental priority	data sheet	PTO/SB/)2B a	ttached hereto.	
As a named inventor, I hereby appoint, respectively and individually, as my attorney(s) or agent(s) with full power of substitution and revocation, the following registered practitioner(s) to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith: Practitioners Associated with the Customer Number OR Registered practitioner(s) named below												
	Name		Registration Number				Na	me			Registration Number	
Kenneth R. Walton			32,951			Valerie J. C	Camara				5,090	
												
Direct all correspondence to: X Customer Number 000210												
Name Kenneth R. Walton												
Address Merck & Co., Inc Patent Department												
Address P.O. Box 2000, RY60-30												
City	Rahway				Sta	ate NJ	NJ ZIP		070	07065-0907		
Country	USA . Telephone				(732)	594-3462		Fax (732)		2)594-4720		
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.												
Name of Sole or First Inventor: A petition has been filed for this unsigned inventor												
Given Name (first and middle [if any]) Family Name or Surname												
Melissa Egbertson												
Inventor's Signature	Date 1 / 2007									1 2004		
Residence: City	Ambler State PA Country US Citizenship US											



Appro ; use through 07/31/2006. OMB 0651-0032 SUBSTITUTE for PTO/SB/02A (08-03), Declaration (Additional Inventors)

DECLARATION AND POWER OF ATTORNEY

ADDITIONAL INVENTOR(S) Supplemental Sheet

Name of Additional Joint Inventor, if any:						A petition has been filed for this unsigned inventor						
Given Name (first and middle [if			fany])			Family Name or Surname						
Jeffrey Y.					N	Melamed						
Inventor's Signature	Jeffor 7. Mil			D	_	5		Date	ate 14-June-200		e-2004	
Residence: Warminster			State	PA	\	Count	ry L	JS		Citiz	enship [JS ·
Mailing Address	3ox 2000)		•		· 1						
City Rahway				State	e N	IJ	ZI	P 0706	55-0907		Country	U.S.A.
Name of Addition	nal Jo	oint Inventor, if any:		·	A petition has been filed for this unsigned inventor							
Give	n Na	me (first and middle [if	any])			Family Name or Surname						
H. Marie					L	Langford						
Inventor's Signature	7	Mane Janglord	L						Date	0	&Jone	2004
Residence: City	Lans	sdale	State	NJ		Count	гу	JS		Citiz	enship [JS
Mailing Address		Merck & Co., Inc. P.O. l	Box 200	0								
City		Rahway		State	NJ		ZIP	07065	5-0 9 07		Country	U.S.A.
Name of Additio	nal J	oint Inventor, if any:		A petition has been filed for this unsigned inventor						inventor		
Give	n Na	me (first and middle [it	any])			Family Name or Surname						
Steven D.					Y	Young				<u>,</u>		
Inventor's Signature		Fen O. G	\(\)						Date	J	ne	9,2004
Residence: City	Lan	sdale	State	PA		Count	гу	JS			enship ['
Mailing Address	Mailing Merck & Co., Inc. P.O. Box 2000											
City		Rahway			Sta	ate NJ		ZIP	07065-09	07	Country	U.S.A.
Name of Additional Joint Inventor, if any:						A petition has been filed for this unsigned inventor						
Given Name (first and middle [it			f any])			Family Name or Surname						
				_								
Inventor's Signature									Date			
Residence: City			State			Count	гу			Citiz	enship	
Mailing	·											•

DT03 Rec'd PCT/PT0 0 2 JUL 2004
THE PATENT & TRADEMARK OFFICE ACKNOWLEDGES, AND HAS
STAMPED HEREON, THE DATE OF THE RECEIPT AND THE ASSIGNED
SERIAL NUMBER OF THE FOLLOWING PATENT APPLICATION:

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CASE NUMBER	DATE	ATTORNEY	EXPRESS MAIL						
210214	7-1-2004	K.R. Walton	EL 989589214						
TITLE		ļ							
"Hydroxynaphthyridinone Carboxamides Useful as HIV Integrase Inhibitors"									
INVENIORS Mellssa Egbertson, Jeffrey Y. Melamed, H. Marie Langford and Steven D. Young									
NO. OF PAGES	NO. OF CLAIM	IS	PAGES OF DRAWING						
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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Egbertson et al.

Serial No.:

10/500,942

Art Unit:

Not Yet Assigned

Docket No.: 21021YP

Filed:

July 2, 2004

For:

HYDROXYNAPHTHYRIDINONE CARBOXAMIDES

USEFUL AS HIV INTEGRASE INHIBITORS

Examiner:

Not Yet Assigned

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Attention:

Office of Initial Patent Examination's

Filing Receipt Corrections

REQUEST FOR CORRECTED FILING RECEIPT

Sir:

The filing receipt mailed February 9, 2005 contains an error. One of the joint inventors was omitted from the filing receipt. The inventor who should be added is H. Marie Langford, of Lansdale, PA. This inventor is included in the Declaration under 35 U.S.C. 371 and is also listed on the return post card acknowledging receipt of the application by the Patent Office.

A corrected filing receipt is requested. A copy of the filing receipt with the requested changes noted thereon is enclosed, along with a copy of the Declaration as submitted and the return post card. Since this request is not the result of an error by the applicant, no fee is believed due.

Respectfully submitted,

Date: February 15, 2005

Bv

Lunt P (1) alton Kenneth R. Walton, Reg. No. 32,951

Attorney for Applicants

Enclosures

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450, on the date appearing below.

MERCK & CO., INC.

Date 2

MERCK & CO., INC. P.O. Box 2000 Rahway, New Jersey 07065-0907 (732) 594-3462

P&T OFFICE ACKNOWLEDGEMENT 2/15/05 ATTORNEY K. R. Walton 10/500,942 CASE NUMBER/ 21021YP SERIAL NUMBER DATE FILED July 2, 2004 APPLICANT Egbertson et al EXPRESS MAIL NO. The Patent & Trademark Office acknowledges, and has stamped hereon, the date of the receip of the teams checked below: ☐ AMENDMENT □ APPEAL AND FEE ☐ ASSIGNMENT ☐ BRIEF ☐ CERTIFICATE OF CORRE ☐ FINAL FEE & LETTER-Request for corrected Filing Receipt ☐ REQUEST FOR F.F. LICENSE ☐ INFORMATION DISCLOSURE STATEMENT ☐ PTO 1449 & REFERENCES □ PETITION FOR EXTENSION OF TIME & FEE ☐ INVITATION TO CORRECT □ DEMAND-CHAPTER II & FEE SHEET x copy of Filing Receipt up changes in red x copy of Declaration x copy of postcard showing omittedaza inventor

P&T OFFICE ACKNOWLEDGEMENT DATE 12/12/05 ATTORNEYK, R. Walton SERIAL NUMBER 10/500,942 CASE NUMBERA 1021YP DATE FILED July 2, 2004 APPLICANT Merck & Co., Inc. EXPRESS MAIL NO. The Patent & Trademark Office acknowledges, and has stamped hereon, the date of the receipt of the items checked below: □ AMENDMENT □ APPEAL AND FEE ☐ ASSIGNMENT ☐ BRIEF □ CERTIFICATE OF CORRECTION ☐ FINAL FEE □ LETTER ☐ REQUEST FOR F.F. LICENSE ☐ INFORMATION DISCLOSURE STATEMENT □ PTO 1449 & REFERENCES □ PETITION FOR EXTENSION OF TIME & FEE ☐ INVITATION TO CORRECT ☐ DEMAND-CHAPTER II & FEE SHEET

X-2nd Request for Corrected Filing Receipt

F4424

Exhibit 2

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2005/0119482 A1

Egbertson et al.

(43) Pub. Date:

Jun. 2, 2005

(54) HYDROXYNAPHTHYRIDINONE CARBOXAMIDES USEFUL AS HIV INTEGRASE INHIBITORS

(76) Inventors: Melissa Egbertson, Ambler, PA (US); Jeffrey Y. Melanmed, Warminster, PA (US); Steven D Young, Lansdale, PA

> Correspondence Address: MERCK AND CO., INC PO BOX 2000 RAHWAY, NJ 07065-0907 (US)

(21) Appl. No.:

10/500,972

PCT Filed:

Jan. 13, 2003

(86) PCT No.:

PCT/US03/00813

Related U.S. Application Data

Provisional application No. 60/349,775, filed on Jan. 17, 2002.

Publication Classification

(51) Int. Cl.⁷ C07D 471/02; A61K 31/5377; A61K 31/506; A61K 31/501;

A61K 31/497

(52) U.S. Cl. 544/125; 544/238; 544/333; 544/405; 546/123; 514/232.5; 514/252.04; 514/255.05; 514/256; 514/300

ABSTRACT (57)

Hydroxynaphthyridinone carboxamides of formula:

(I) όн

are described as inhibitors of HIV integrase and inhibitors of HIV replication, wherein L, R^{1a}, R^{1b}, R^{1c}, R^{2a}, R^{2b}, R³, R⁴, and R⁵ are defined herein. These compounds are useful in the prevention and treatment of infection by HIV and in the prevention, delay in the onset, and treatment of AIDS. The compounds are employed against HIV infection and AIDS as compounds per se or in the form of pharmaceutically acceptable salts. The compounds and their salts can be employed as ingredients in pharmaceutical compositions, optionally in combination with other antivirals, immunomodulators, antibiotics or vaccines. Methods of preventing, treating or delaying the onset of AIDS and methods of preventing or treating infection by HIV are also described.

Missing: H. MARIE LANGFORD

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